Amendments in the Claims

1. (currently amended) A saturable reflector apparatus comprising:

    a) a substrate comprising a modified surface and a second surface, wherein said modified surface and said second surface form two opposing surfaces in an etalon, wherein said etalon has a finesse greater than about 10; and

    b) a reflector deposited on said second surface of said substrate, wherein said reflector includes a saturable absorber layer, whereby said saturable absorber layer is not disposed between said modified surface and said second surface ~~wherein said modified surface and said reflector form two opposing surfaces in an etalon, wherein said etalon has a finesse greater than about 10~~.

2. (original) The apparatus of claim 1 wherein the modified surface has been polished.

3. (original) The apparatus of claim 1 wherein the modified surface includes a coating.

4. (original) The apparatus of claim 3 wherein the coating includes a metallic or a dielectric material.

5. (currently amended) The apparatus of claim 1[[,]] further comprising means for tuning ~~an etalon effect of~~ the etalon.

6. (previously presented) The apparatus of claim 5 wherein the tuning means comprise means for adjusting an optical thickness between the two opposing surfaces.

7. (previously presented) The apparatus of claim 6 wherein the adjusting means comprises a heat transfer element thermally coupled to the substrate via said modified surface, wherein the heat transfer element is chosen from the group consisting of heater elements and cooling elements.

8. (currently amended) The apparatus of claim 7[[,]] further comprising a temperature controller coupled to the heat transfer element.

9. (currently amended) The apparatus of claim 1[[,]] wherein the reflector includes a Bragg stack~~, whereby the saturable reflector apparatus is a saturable Bragg reflector (SBR)~~.

10. (original) The apparatus of claim 1 wherein the reflector includes a metal or dielectric film.

11. (currently amended) The apparatus of claim 1[[,]] wherein the substrate is between about 100 microns and 1000 microns thick.

12. (currently amended) A method for modifying a gain spectrum of a laser ~~tuning a saturable reflector~~ comprising the steps of:

a) providing a substrate having a modified surface and a second surface, wherein said modified surface and said second surface form two opposing surfaces in an etalon; and

b) providing a reflector deposited on the second surface of the substrate, wherein the reflector includes a saturable absorber layer[[;]] whereby said saturable absorber layer is not disposed between said modified surface and said second surface, wherein radiation within said laser is reflected by said reflector, wherein said gain spectrum of said laser is modified by said etalon.

~~c) providing an etalon comprising two opposing surfaces, wherein the reflector and the modified surface form said two opposing surfaces of said etalon; and~~

~~d) modifying a spectrum of radiation entering said etalon through said reflector thereby changing a gain spectrum and decreasing a length of an optical pulse.~~

13. (previously presented) The method of claim 12 wherein the modified surface comprises a surface polished to within a quarter wavelength of light that will be used with the saturable reflector.

14. (previously presented) The method of claim 12 wherein the modified surface comprises a reflective coating.

15. (previously presented) The method of claim 14 wherein the coating includes a metallic or a dielectric material.

16. (currently amended) The method of claim 12[[,]] further comprising the step of tuning ~~an etalon effect of~~ the etalon.

17. (previously presented) The method of claim 16 wherein the tuning step comprises adjusting an optical thickness between the modified surface and the second surface of the substrate.

18. (previously presented) The method of claim 17 wherein the thickness is adjusted by controlling a temperature of the substrate.

19. (currently amended) The method of claim 18[[,]] wherein the tuning adjusts ~~said~~ a length of ~~said~~ an optical pulse

circulating within said laser. ~~that is incident on the saturable reflector.~~

20. (canceled) ~~The method of claim 16, wherein the tuning optimizes a relation between temporal and frequency domains of radiation incident on the saturable reflector.~~

21. (canceled) ~~The method of claim 16 wherein the tuning adjusts a distribution of optical power amongst a plurality of modes of radiation incident on the saturable reflector.~~

22. (currently amended) A laser comprising:

a) an optical cavity;

b) a lasing medium disposed within the optical cavity;

c) a pump configured to provide pump radiation to the lasing medium; and

d) a saturable reflector optically coupled to the cavity, wherein the saturable reflector includes

 i) a substrate comprising a modified surface and a second surface, wherein said modified surface and said second surface form two opposing surfaces in an etalon, wherein said etalon has a finesse greater than about 10; and

 ii) a reflector deposited on said second surface of said substrate, wherein said reflector includes a saturable absorber layer, whereby said saturable

absorber layer is not disposed between said modified surface and said second surface ~~wherein said modified surface and said reflector form two opposing surfaces in an etalon, wherein said etalon has a finesse greater than about 10~~.

23. (previously presented) The laser of claim 22 further comprising a non-linear medium disposed within the cavity.

24. (currently amended) The laser of claim 23 wherein the nonlinear medium is a crystal containing a material chosen from the group consisting of Lithium Niobate ($LiNbO_3$), Lithium Tantalate ($LiTaO_3$), Lithium Borate ($LiBO_3$), periodically poled lithium niobate (PPLN), periodically poled lithium tantalate (PPLT), MgO:PPLN, KTP, PPKTP, RTA, BBO, MgO:LN, KTA, and PPRTA.

25. (previously presented) The laser of claim 22 wherein the modified surface is a polished surface.

26. (previously presented) The laser of claim 22 wherein the modified surface comprises a coating.

27. (previously presented) The laser of claim 26 wherein the coating includes a metallic or a dielectric material.

28. (currently amended) The laser of claim 22[[,]] further comprising means for tuning ~~an etalon effect of~~ the etalon.

29. (currently amended) The laser of claim 28 wherein the tuning means ~~adjusts~~ comprises means for adjusting an optical thickness between said modified surface and said second surface of the substrate.

30. (previously presented) The laser of claim 29 wherein the adjusting means comprises a heater element thermally coupled to the substrate.

31. (currently amended) The laser of claim 30[[,]] further comprising a temperature controller coupled to the heater element.

32. (previously presented) The laser of claim 22 wherein the substrate has a thickness large enough such that the etalon has a free spectral range of the same order as a linewidth of the laser.

33. (previously presented) The laser of claim 32 wherein the free spectral range is on the order of 1 GHz.

34. (currently amended) The laser of claim 22 wherein the reflector is a Bragg stack~~, whereby the saturable reflector is a saturable Bragg reflector (SBR)~~.

35. (currently amended) The laser of claim 22[[,]] wherein the reflector includes a metallic or dielectric film.

36. (currently amended) The laser of claim 22[[,]] wherein the substrate has a thickness between about 100 microns and 1000 microns.

37. (new) The method of claim 12 wherein said etalon has a finesse greater than about 10.